Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (currently amended): A method of depositing a dense, strain-tolerant, vertically-cracked yttria-stabilized zirconia (YSZ) containing ~~YSZ-containing~~ ceramic layer on a second ceramic layer present on a substrate, the second ceramic layer having a composition consisting essentially of ~~containing~~ either a combination of YSZ and mullite or a combination of YSZ and an alkaline-earth metal aluminosilicate so as to have a coefficient of thermal expansion lower than the YSZ-containing ceramic layer, the method comprising the step of depositing the YSZ-containing ceramic layer using a plasma spraying technique while maintaining the substrate at a temperature of not greater than 600°C if the composition of the second ceramic layer contains the combination of YSZ and mullite, and a temperature of not greater than 500°C if the composition of the second ceramic layer contains the combination of YSZ and alkaline-earth metal aluminosilicate.

Claim 2 (original): A method according to claim 1, wherein the substrate is maintained at a temperature of at least about 300°C during the depositing step.

Claim 3 (original): A method according to claim 1, wherein the YSZ-containing ceramic layer consists essentially of YSZ.

Claim 4 (currently amended): A method according to claim 3, wherein the second ceramic layer is a mixture consisting ~~essentially~~ of the YSZ and either mullite or an alkaline-earth metal aluminosilicate.

Claim 5 (original): A method according to claim 1, wherein the composition of the second ceramic layer contains the combination of YSZ and mullite.

Claim 6 (original): A method according to claim 5, wherein the second ceramic layer contains about 50 volume percent mullite and about 50 volume percent YSZ.

Claim 7 (original): A method according to claim 5, wherein the substrate is maintained at a temperature of up to about 550°C during the depositing step.

Claim 8 (original): A method according to claim 1, wherein the composition of the second ceramic layer contains the combination of YSZ and alkaline-earth metal aluminosilicate.

Claim 9 (currently amended): A method according to claim 8, wherein the

second ceramic layer contains about 50 volume percent barium-strontium-aluminosilicate (BSAS) ~~BSAS~~ and about 50 volume percent YSZ.

Claim 10 (original): A method according to claim 8, wherein the substrate is maintained at a temperature of about 450°C during the depositing step.

Claim 11 (original): A method according to claim 1, wherein the second ceramic layer has a substantially uniform composition.

Claim 12 (original): A method according to claim 1, wherein the second ceramic layer comprises sublayers, an innermost sublayer of the sublayers having a substantially uniform composition of either mullite or alkaline-earth metal aluminosilicate, an outermost sublayer of the sublayers contacting the YSZ-containing ceramic layer and having a substantially uniform composition of YSZ.

Claim 13 (original): A method according to claim 1, wherein the second ceramic layer is compositionally graded, consists essentially of either mullite or alkaline-earth metal aluminosilicate at an innermost region of the second ceramic layer nearest the substrate, and consisting essentially of YSZ at an outermost region of the second ceramic layer contacting the YSZ-containing ceramic layer, the second ceramic layer having a decreasing concentration of mullite or alkaline-earth metal aluminosilicate and an increasing concentration of YSZ in a direction toward the YSZ-containing ceramic

layer.

Claim 14 (currently amended): A method of forming a thermal/environmental barrier coating system on a substrate formed of a silicon-containing material, the method comprising the steps of:

depositing a silicon-containing bond coat on the substrate;

depositing a mullite-containing first layer on the bond coat;

depositing a second layer on the first layer, the second layer consisting essentially of barium-strontium-aluminosilicate (BSAS) ~~BSAS~~;

depositing a third layer on the second layer, the third layer consisting essentially of yttria-stabilized zirconia (YSZ) and either mullite or BSAS; and

depositing a dense, strain-tolerant, vertically-cracked topcoat ~~of yttria-stabilized zirconia~~ on the third layer using a plasma spraying technique while maintaining the substrate at a temperature of not greater than 600°C if the third layer consists essentially of YSZ and mullite, and a temperature of not greater than 500°C if the third layer consists essentially of YSZ and BSAS, the topcoat consisting essentially of YSZ and having a coefficient of thermal expansion higher than the third layer.

Claim 15 (original): A method according to claim 14, wherein the third layer consists essentially of YSZ and mullite, and the substrate is maintained at a temperature of about 300°C to about 550°C during the step of depositing the topcoat.

Claim 16 (currently amended): A method according to claim 15, wherein the third layer contains about 50 volume percent mullite and about 50 volume percent YSZ ~~yttria-stabilized zirconia~~.

Claim 17 (original): A method according to claim 14, wherein the third layer consists essentially of YSZ and BSAS, and the substrate is maintained at a temperature of about 300°C to about 450°C during the step of depositing the topcoat.

Claim 18 (currently amended): A method according to claim 17, wherein the third layer contains about 50 volume percent BSAS and about 50 volume percent YSZ ~~yttria-stabilized zirconia~~.

Claim 19 (original): A method according to claim 14, wherein the third layer has a substantially uniform composition.

Claim 20 (original): A method according to claim 14, wherein the third layer comprises sublayers, an innermost sublayer of the sublayers having a substantially uniform composition of either mullite or BSAS, an outermost sublayer of the sublayers contacting the topcoat and having a substantially uniform composition of YSZ.

Claim 21 (original): A method according to claim 14, wherein the third layer is compositionally graded, consists essentially of either mullite or BSAS at an

innermost region of the third layer nearest the substrate, and consisting essentially of YSZ at an outermost region of the third layer contacting the topcoat, the third layer having a decreasing concentration of mullite or BSAS and an increasing concentration of YSZ in a direction toward the topcoat.

Claim 22 (original): A method according to claim 14, wherein the first layer is mullite or a mixture of mullite and BSAS.

Claim 23 (original): A method according to claim 14, wherein the first layer consists essentially of mullite.

Claim 24 (original): A method according to claim 14, wherein the substrate is formed of a material selected from the group consisting of metal matrix composites reinforced with silicon carbide, silicon nitride and/or silicon, composites having a matrix of silicon carbide, silicon nitride and/or silicon, and composites with a silicon carbide, silicon nitride and/or silicon matrix reinforced with silicon carbide, silicon nitride and/or silicon.

Claim 25 (original): A method according to claim 14, wherein the substrate is a surface of a gas turbine engine component.